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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/818,290	03/27/2001	John A. Corey	21535-006	9240

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MINTZ, LEVIN, COHN, FERRIS, GLOVSKY  
AND POPEO, P.C.  
ONE FINANCIAL CENTER  
BOSTON, MA 02111

[REDACTED]

SCALTRITO, DONALD V

ART UNIT	PAPER NUMBER
1745	4

DATE MAILED: 10/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	09/818,290	COREY ET AL.
	Examiner Donald V Scaltrito	Art Unit 1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 27 March 2001.

2a) This action is FINAL.                    2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-46 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) 27-36,40,45 and 46 is/are allowed.

6) Claim(s) 1,16,22,24-26,37 and 41 is/are rejected.

7) Claim(s) 2-15,17-21,23,38,39 & 42-44 is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 27 March 2001 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some \* c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ .
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>2</u> .	6) <input type="checkbox"/> Other: _____

## **DETAILED ACTION**

### ***Claim Objections***

Claim 12 is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only. See MPEP § 608.01(n). Accordingly, Claim 12 has not been further treated on the merits.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 26 & 43 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to Claim 26, it appears to be written as both an apparatus and a method claim. Claim 43 recites the limitation "adjacent said collar" in the second line of this claim. However, Claim 41 fails to disclose this limitation. Therefore, there is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

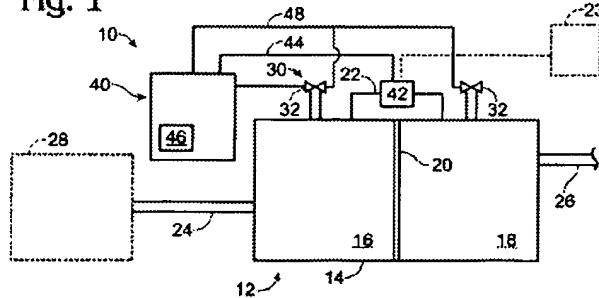
(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 1, 16, 22, 24-26 & 37 are rejected under 35 U.S.C. 102(e) as being anticipated by Herron (U.S. Patent No. 6,242,120).

Herron discloses a system for optimizing the purge cycle of a fuel cell stack that is in response to the performance of the fuel cell system. The system includes a controller that measures a process parameter indicative of the rate at which water is being produced in the fuel cell. If the measured value exceeds a threshold value, then the purge assembly is automatically actuated.

With respect to Claim 1, Herron discloses a fuel cell system that is provided with an anode chamber supplied with fuel, a cathode chamber supplied with oxidant, an electrolytic membrane separating the two chambers and a series of conduits that connects the anode and cathode chambers wherein two valves are disposed along the conduits for the purposes of governing fluid supply (see Figure 1 of this reference, shown below).

**Fig. 1**



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With respect to Claim 16, Herron discloses that the valves are opened to depressurize the fuel cells and exhaust built up gases (column 3, lines 36-40). With respect to Claim 24, it is well known to one of ordinary skill in the art that proton-conducting membranes are not electronically conducting. With respect to Claim 22, Herron discloses measuring a value of a process parameter representative of the performance of a fuel cell stack (column 6, lines 36-46). It is well known to one of ordinary skill in the art that electricity generation is an important process of fuel cell system operation.

With respect to Claim 25, Herron discloses a method of reducing water in a fuel cell system wherein water is removed from the fuel cell after a predetermined level is reached and a controller signals the purge valves to open and allow for depressurization (column 3, lines 36-59).

With respect to Claim 26, Herron discloses a fuel cell system that is provided with an anode chamber supplied with fuel, a cathode chamber supplied with oxidant, an electrolytic membrane separating the two chambers and a series of conduits that connects the anode and cathode chambers wherein two valves are disposed along the conduits for the purposes of governing fluid supply. Herron also teaches that water can be removed from a fuel cell after a predetermined level is reached and the controller signals the purge valves to open and allow for depressurization (column 3, lines 36-59).

With respect to Claim 37, Herron discloses a water management system in a fuel cell stack that is provided with an anode chamber supplied with fuel, a cathode chamber supplied with oxidant, an electrolytic membrane separating the two chambers and a series of conduits that

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connects the anode and cathode chambers wherein two valves are disposed along the conduits for the purposes of governing fluid supply.

This reference, therefore, anticipates Claims 1, 16, 22, 24-26 & 37 of the current application.

Claim 41 is rejected under 35 U.S.C. 102(e) as being anticipated by Horiguchi (U.S. Patent No. 6,468,681).

Horiguchi discloses a fuel cell system that has a plurality of fuel cells each having a cathode and an anode disposed on opposite sides of an electrolyte membrane. The fuel cell has an air supply passage through which atmospheric air is supplied to the cathode and a fuel gas supply passage that supplies hydrogen to the anode.

With respect to Claim 41, Horiguchi discloses that the fuel cell system is also equipped with water spray nozzles that spray liquid water directly onto the cathode (see column 8, lines 52-60 of this reference).

This reference, therefore, anticipates Claim 41 of the current application.

#### *Allowable Subject Matter*

Claims 27-36, 40, 45 & 46 are allowed.

With respect to Claims 27-35, the prior art of record fails to teach a fuel cell system having an anode chamber, a cathode chamber and a proton-conducting membrane wherein the anode and cathode chambers are connected via conduits that have multiple valves and a gas plenum disposed along the conduits.

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With respect to Claim 36, the prior art of record fails to teach a direct methanol fuel cell system having an anode chamber, a cathode chamber and a proton-conducting membrane wherein the anode and cathode chambers are connected via conduits that have multiple valves and a gas plenum disposed along the conduits. Furthermore, the prior art of record fails to teach the flow of carbon dioxide gas from the anode chamber into the gas plenum and then from the gas plenum into the cathode chamber.

With respect to Claim 40, the prior art of record fails to teach a method of reducing the amount of water in a fuel cell system wherein the flow of water is directed from the anode chamber into the gas plenum and then from the gas plenum into the cathode chamber.

With respect to Claims 45 & 46, the prior art of record fails to teach a method of reducing the amount of water in a fuel cell system wherein the flow of water is directed from the anode chamber into the gas plenum and then from the gas plenum into the cathode chamber while a low pressure region is established adjacent to the cathode outlet.

Claim 43 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. The prior art of record fails to teach a mixing chamber positioned adjacent to the cathode gas outlet.

Claims 2-15, 17-21, 23, 38, 39 & 42-44 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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The following is a statement of reasons for the indication of allowable subject matter:  
The prior art of record fails to teach a direct oxidation fuel cell system having an anode chamber, a cathode chamber and a proton-conducting membrane wherein the anode and cathode chambers are connected via conduits that have multiple valves and a gas plenum disposed along the conduits. Furthermore, the prior art of record fails to teach the flow of gases from the anode chamber into the gas plenum and then from the gas plenum into the cathode chamber.

*Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donald Scaltrito, whose telephone number is 703.305.4926. The examiner can be reached in his office on Monday-Friday between the hours of 9am to 6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan, may be reached at 703.308.2383. The official fax number for the organization where this application or proceeding is assigned is 703.305.3599.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703.308.0661

Donald Scaltrito  
Patent Examiner *DJS*  
Art Unit 1745  
October 23, 2002

*Carol Chaney*  
**CAROL CHANEY**  
**PRIMARY EXAMINER**